



Programme of the NITROS International Workshop on Engineering for Rotorcraft Safety

Virtual Workshop 7-9 April 2021

Day 1, April 7, 2021, Morning Chairman Pierangelo Masarati

- 09:30 Giuseppe Quaranta, *Politecnico di Milano*
“Introduction to the NITROS Workshop on Engineering for Rotorcraft Safety”
- 09:40 Fabio Nannoni, *Senior Vice President Safety System Governance Leonardo*
“Welcome to the participants by Leonardo Helicopter Division”
- 09:45 P. Parente, *Leonardo Helicopter Division*
“PBN for RC operations: improved safety and unparalleled operational flexibility”
- 10:30 Open discussion
- 10:50 Coffee break
- 11:15 D. Tilloca, *Politecnico di Torino*
“Hazard and risk analysis for helicopter aerial work mission profiles”
- 11:45 D. Friesen, *TU Delft and Politecnico di Milano*
“Design and evaluation of a constraint-based helicopter display to support safe path planning”
- 12:15 P. Masarati, *Politecnico di Milano*
“Helicopter emergency medical services (HEMS): higher availability calls for more stringent safety requirements”
- 12:45 Lunch break

Day 1, April 7, 2021, Afternoon Chairman Giuseppe Quaranta

- 14:00 P. Scaramuzzino, *TU Delft and Politecnico di Milano*
“Autorotation transfer of training: effects of helicopter dynamics variation”
- 14:30 M. Favale, *Leonardo Helicopter Division*
“Virtual sensors for prediction and monitoring”
- 15:00 *Coffee break*
- 15:30 N. Nabi, *Politecnico di Milano and TU Delft*
“Load alleviation in tiltrotor aircraft through incremental nonlinear control allocation”
- 16:00 F. Marino, *Robby Moto Engineering*
“TEPS project”
- 16:30 Wrap-up
- 16:45 End of day 1

Day 2, April 8, 2021, Morning Chairman Marilena Pavel

- 09:30 G. Padfield, *Emeritus Professor University of Liverpool*
“The potential impact of critical aircraft pilot couplings on the safety of tilt-rotor operations”
- 10:15 Open discussion
- 10:30 A. Cocco, *Politecnico di Milano*
“Effect of control inceptors dynamics on helicopter vertical bounce proneness”
- 11:00 Y. Yu, *Tu Delft and Politecnico di Milano*
“Analysis of rotorcraft pilot couplings from the perspective of RPC detection: a new multi-axes distinguishable ROVER method”
- 11:30 Coffee break
- 11:45 M. Jump, *University of Liverpool*
“Preliminary piloted flight-simulation evaluation of autogiro operations in the presence of wind-turbine wake”
- 12:15 S. Henriquez Huecas, *University of Liverpool and University of Glasgow*
“Helicopter handling analysis using a synthetic eddy turbulence model”
- 12:45 Lunch break

Day 2, April 8, 2021, Afternoon Chairman Mark White

- 14:00 R. Bianco-Mengotti, *Leonardo Helicopter Division*
“The advantages of virtual engineering in rotorcraft flight mechanics design process”
- 14:30 N. Taymourtash, *Politecnico di Milano and University of Glasgow*
“Aerodynamic load assessment of model-scale helicopter in shipboard operation”
- 15:00 *Coffee break*
- 15:30 S. Fasiello, *Politecnico di Milano and University of Liverpool*
“The effect of turbulence on RPC incipience and workload”
- 16:00 Y. Yu, *TU Delft and Politecnico di Milano*
“Analysis of rotorcraft pilot couplings from the perspective of mode transition: influence of full authority flight control mode transition”
- 16:30 Wrap-up
- 16:45 End of day 2

Day 3, April 9, 2021, Morning Chairman George Barakos

- 09:30 C. Audard, *EASA Safety coordinator - VTOL*
“Rotorcraft safety roadmap and regulatory perspective on design safety improvements”
- 10:15 Open Discussion
- 10:30 F. Fonte, *Leonardo Helicopter Division*
“AW609 whirl flutter simulation, model validation and flight test for aeroelastic stability certification”
- 11:00 S. Ghiasvand, *Politecnico di Milano and University of Liverpool*
“Experimental and numerical investigation of matrix cracking and delamination interaction of curved composite laminates by FBG sensors”
- 11:30 Coffee break
- 11:45 M. Filippi, *Politecnico di Torino*
“Multi-dimensional FE models for multifield analyses of composite realistic helicopter blade”
- 12:15 C. Paciello, *Step Sud Mare S.r.l*
“Crashworthiness of a tiltrotor fuel tank bay”
- 12:45 Lunch break

Day 3, April 9, 2021, Afternoon Chairman Giuseppe Quaranta

- 14:00 F. De Domenico, *Leonardo Helicopter Division*
“Rotorcraft ice protection in LHD”
- 14:30 M. Morelli, *Politecnico di Milano and University of Glasgow*
“High-fidelity numerical ice prediction on rotors”
- 15:00 *Coffee break*
- 15:30 F. Di Caprio, *CIRA*
“Numerical evaluation of the damage scenario due to a bird strike on the wing leading edge of a tiltrotor”
- 16:00 F. Rovere, *University of Glasgow and Politecnico di Milano*
“Brown-out simulations of model-rotors”
- 16:30 Wrap-up
- 16:45 End of day 3